CHEKMAREV. F. G.

33507

K Kazuistike Ogromnykh Anevrizm Aorty. Sbornik Nauch. Rabot (Ryaz. Obl. Otd. Zdravookhraneniya), Vyp. 2, 1949, c. 72-75.

SO: Letopis' Zhurnal'nykh Statey, Vol. 45, Maskva, 1949

CHEKMAREV, I.A.

25(1) PHASE I BOOK EXPLOITATION SOV/2727

Obrabotka metallov davleniyem; sbornik statey, vyp. 5 (Metal Forming; Collection of Articles, No. 5) Moscow, Metallurgizdat, 1959. 197 p. 3,000 copies printed.

Scientific Ed.: L.Kh. Al'shevskiy, Candidate of Technical Sciences; Ed. of Publishing House: E.A. Valov; Tech. Ed.: A.I. Karasev.

PURPOSE: This collection of articles is intended for technical personnel and scientific workers in the metallurgical and machinery-construction industries.

COVERAGE: This collection of articles deals with problems of rolling and tube manufacture. Results of research done on roll design and new methods of determining basic manufacturing parameters in the production of tubes and other rolled shapes are presented. Methods of analyzing the kinematics of processes in helical piercing mills and rolling mills by means of motion pictures are discussed. Also discussed are several phenomena associated with tube rolling. No personalities are mentioned. References follow several of the articles.

Plyatskovskiy, O.A. [Candidate of Technical Sciences, Vsesoyuznyy nauchno-issledovatel'skiy trubnyy institut (All-Union Scientific Research Institute for Pipe)]. Investigation of the Kinematics of Processes in Helical Piercing Mills by Motion Picture Filming and Other Methods 114

This article deals with industrial and laboratory tests of a method of investigating kinematic processes in rolling by means of motion pictures. The mechanism of the process is discussed, and experiments on piercing and three-high mills are described. Results are shown in tables and diagrams.

Plyatskovskiy, O.A., N.L. Osadn [Candidate of Technical Sciences], and E.O. Rodov [Engineer], [Novotrubnyy zavod (Novotrubnoye Plant)]. Rolling Medium-diameter Stainless Steel Tubes With Increased Rate of Deformation 129

This article deals with an experimental investigation of the use of stainless steel with a high deformation coefficient in piercing processes. Results show an increase in the rate of production and greater economy of materials.

Vatkin, Ya.L. [Candidate of Technical Sciences]; A.A. Shevchenko [Doctor of Technical Sciences]; and I.B. Kroufel'd, S.V. Roshkov, and I.A. Chekmarev, [Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute), and All-Union Scientific Research Institute for Pipe]. Investigation of Tube Rolling in a Continuous Mill With a Long Mandrel 143

Results of experimental investigations of pass design for a continuous tube-rolling mill are presented. Causes of such tube defects as nonuniformity of wall thickness and defective ends are discussed. Improvements in pass design, mandrel withdrawal, and roll pressure adjustments are suggested as remedies.

Meyerovich, I.M. [Candidate of Technical Sciences], and P.P. Lavrov [Engineer], [TsNIITMASh]. Torque During Tube Rolling in a Continuous Seven-stand Mill 165

Shevakin, Yu.F. [Doctor of Technical Sciences], and G. Ya Gun [Engineer], [Ural Polytechnical Institute]. Analytical Method for Determining Unit Pressure During Tube Rolling Without a Mandrel 173

Bernshteyn, M.M. [Engineer, All-Union Scientific Research Institute for Pipe]. Change in Wall Thickness of Small-size Tubes During Drawing Without a Mandrel 179

A formula is derived for determining changes in wall thickness and outside diameter, amount of reduction, approach angle of the nib, coefficient of friction, and ultimate strength of the material. Another formula for determining initial wall thickness is presented. The formulas are confirmed by experimental data.

Card 6/7

CHEKMAREV, I.A.

(14)

PHASE I BOOK EXPLOITATION SOV/3611

Dnepropetrovsk. Metallurgicheskiy institut

Obrabotka metallov davleniyem (Metal Forming) Khar'kov, Metallurgizdat, 1960. 326 p. (Series: Its: Nauchnyye trudy, vyp. 39) 2,100 copies printed.

Ed.: A.P. Chekmarev; Ed. of Publishing House: R.A. Belina; Tech. Ed.: S.P. Andreyev.

PURPOSE: This collection of articles is intended for technical and scientific personnel in metallurgy and in mechanical engineering. It will also be of interest to designers of rolling equipment.

COVERAGE: This collection of articles treats the theory of rolling. It discusses such factors as the total and the unit pressures of the work on rolls, moments of rolling, forward slip, spread, etc. It also includes results obtained from investigation of rail quality, rolling of cast iron sheets, and other problems. No personalities are mentioned. References follow each article.

CHEKMAREV, I. A., Cand Tech Sci -- (diss) "Research into continuous rolling of pipe on long mandrel." Dnepropetrovsk, 1960. 22 pp; (Academy of Sciences Ukrainian SSR, Inst of Ferrous Metallurgy); 120 copies; price not given; (KL, 21-60, 126)

CHEKMAREV, I.A., kand. tekhn. nauk; CHUYKO, P.I., inzh.; SOKHRENKO, V.P., inzh.; ROKUTOV, V.P., inzh.; MAKEYEV, Yu.B., inzh.

Method of studying the properties of metalworking lubricants during the hot rolling of pipe on a long mandrel. Proizv. trub no.11:40-46 '63. (MIRA 17:11)

ACCESSION NR: AT4045010 S/0000/64/000/000/0160/0164

AUTHOR: Chizh, V. A.; Rudoy, V. S.; Rulla, N. V.; Chekmarev, I. A.; Fesenko, G. M.; Nesterova, N. N.

TITLE: Quality control of high-alloy austenitic steel ingots by the method of Gamma-defectoscopy

SOURCE: Soveshchaniye po probleme izpol'zovaniye atomnoy energii. Kiev, 1961. Radiatsionnaya avtomatika, izotopy* i yaderny*ye izlucheniya v nauke i tekhnike (Radiation automation control systems; isotopes, and nuclear radiation in science and technology); doklady* soveshchaniya. Kiev, Izd-vo AN UkrSSR, 1964, 160-164

TOPIC TAGS: steel ingot, steel casting, steel forging, high alloy steel, austenitic steel, steel ingot structure, steel ingot defect, ingot defect detection, Gamma defectoscopy

ABSTRACT: Air bubbles, porosities and blow holes are common defects in ingots of high-alloy austenitic steel. Because of the low plasticity of such steel at high temperatures, these defects lead to cracks and porosity and even to complete rupture of the ingot during forging and rolling. In order to facilitate the detection of such defects in steel ingots, the authors tested the method of γ-defectoscopy and compared the results with the behavior of the ingots during forging. Eleven

Card 1/2

ACCESSION NR: AT4045010

Ingots (80 x 270 mm) were examined by transillumination with γ-rays from Co-60, revealing deep bubbles and porosities in nearly all cases. During subsequent forging to a diameter of 40-43 mm (3-5 forgings with a 350-kg pneumatic hammer at 1150-1180C), the 2 ingots with the deepest bubbles broke completely, and several others showed defective behavior, thus confirming the effectiveness and accuracy of the γ-defectoscopic technique. Finally, sections (3 cylindrical and 5 conical) were cut from the ingots and the compressibility was tested. The maximal critical compression (10%) was obtained in a section which was free of defects, showing that the plasticity is decreased by both bubbles and porosity. The authors conclude that quality control by this method will permit establishment of maximal permissible limits for defects in steel ingots, which is of particular importance in the case of ingots intended for pipe manufacture. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 07Jan64 ENCL: 00 SUB CODE: MM, IE

NO REF SOV: 000 OTHER: 000

L 20784-66 EWP(k)/EWT(m)/T/EWA(d)/EWP(w)/EWP(t) JD/HW

ACC NR: AP6004647 SOURCE CODE: UR/0383/65/000/005/0047/0049

41
39
B

AUTHOR: Rudoy, V. S.; Chekmarev, I. A.; Serbin, I. V.; Sukonnik, I. M.

ORG: none

TITLE: Production of tubes of EI847 highly heat-resistant complex-alloyed steel

SOURCE: Metallurgicheskaya i gornorudnaya promyshlennost', no. 5, 1965, 47-49

TOPIC TAGS: metal tube, alloy steel, heat resistant steel, electroslag melting/EI847 highly heat-resistant complex-alloyed steel

ABSTRACT: EI847 (Kh16N15M3B) austenitic Cr-Ni-Mo steel, while highly heat-resistant, displays comparatively low plastic properties. In this connection, the authors tested different techniques of producing melts of this steel, with the object of uncovering a technique assuring an improved plasticity of the steel so as to make it more suitable for use in the fabrication of high-temperature tubes. Metallographic examination, chemical analysis, and investigations of plasticity in the presence of elevated temperatures as well as the hot rolling of experimental and industrial sets of tubes from six different melts containing identical amounts of Cr, Ni, Mn and Si plus 0.05-0.5% C, 0.007-0.015% S, 0.012-0.17% P, 0.49-1.0% Nb, 7.4-15.0% Mo established that the metal produced by the electroslag melting method displays the optimal plasticity at elevated temperatures (up to 1250-1275°C). It

Card 1/2 UDC: 621.774:669. 16-194

L 20784-66

ACC NR: AP6004647

2

was furthermore finally established that the Nb content and the Nb/C ratio, within the limits investigated, do no affect plasticity. The lowest plasticity characteristics are displayed by the melts produced from charge materials to which scrap metal had been added, owing to excessive contamination with nonmetallic impurities. The principal type of defects is internal and external cracks at the sites of the pile-ups of nonmetallic inclusions representing stress concentrators. Improvements in rolling technology did not produce the desired results and thus the principal factor affecting the plasticity of EI847 steel is its melting technology. The optimal melting technology, as developed at the Dneprospetsstal' Plant, requires the use of extra-pure fresh charge materials and electroslag melting. Orig. art. has: 4 figures and 3 tables.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 003/ OTH REF: 000

Card 2/2

L 08947-67 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/HW
ACC NR: AP6031515 SOURCE CODE: UR/0383/66/000/004/0035/0036

AUTHOR: Rudoy, V. S. (Candidate of technical sciences); Chekmarev, I. A. (Candidate of technical sciences); Sukonnik, I. M.; Geppa, S. A.; Serbin, I. V.; Yermolov, I. V.; Chizh, V. A.; Derbasov, V. I.; Kurilenko, V. Kh.; Kirvalidze, N. S.; Pasternak, N. M.
58

ORG: none

TITLE: Improving the plasticity of Kh18N10T tube steel by vacuum-arc melting

SOURCE: Metallurgicheskaya i gornorudnaya promyshlennost', no. 4, 1966, 35-36

TOPIC TAGS: austenitic steel, plasticity, ~~steel plasticity improvement~~, vacuum arc, ~~_____ steel~~. VACUUM MELTING, METAL TUBE / Kh18N10T STEEL

ABSTRACT: The plasticity of conventionally arc melted and vacuum arc melted Kh18N10T steel was tested by rolling conical specimens in a piercing mill and by torsion tests, both at 1000—1300C. It was found that in piercing, the critical reduction depends primarily upon the α-phase content. Metal with a high α-phase content cannot be easily pierced at a temperature of 1200C or higher regardless of the melting method. The content of impurities and gases is of secondary importance. In torsion tests, plasticity was found to depend mainly upon the metal purity. Inasmuch as vacuum arc melting yields steel of a higher purity, its plasticity is also higher than that of conventionally melted steel. The increase of α-phase con-

UDC: 669.15—194.621.774.35

L 08947-67

ACC NR: AP6031515

tent up to a certain limit does not substantially affect the plasticity of Kh18N10T steel, but an increase over this limit lowers the steel plasticity. Orig. art. has: 2 figures. [ND]

SUB CODE: 11,13 / SUBM DATE: none/ ORIG REF: 002/

Card 2/2 nst

S/124/61/000/011/011/046
D237/D305

AUTHOR: Chekmarev, I.B.

TITLE: Transverse pressure gradient in the infinite smooth conducting cylinder in presence of an axial smooth conductor exhibiting corona discharge

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 11, 1961, 13-14 abstract 11B75 (Tr. Leningr. politekhn. in-ta, 1958, no. 198, 169 - 172)

TEXT: During the corona discharge of a smooth negative conductor situated axially in an infinite cylinder, a negative volume charge is formed, whose volume density is ρ_e, and which occupies practically the whole space between the conductor and the cylinder (except for v. narrow ionization zone around the conductor). Within that volume, air molecules are acted upon by a radial electrical field with force $\rho_e \underline{E}$ which results in a transverse pressure gradient Calculated pressure distribution was compared with experimental re-

Card 1/2

sults (for the case of a cylinder of radius R = 40 mm, and conductor of radius r_0 = 0.5 mm). Up to the distance R/2 from the walls, experiment agrees well with theory, but on approaching the conductor increasing deviation is observed which is caused by influence of a glass tube of the pressure gauge on the discharge. Experiment confirms the linear dependence of the pressure fall between the conductor and the wall on the intensity of corona current, although numerical deviation of the results is also observed. If there is an axial pressure fall along the cylinder, it will cause the movement of gas in that direction and its velocity will be independent of electrical field. [Abstractor's note: Complete translation].

CHEKMAREV, I. B., Cand Phys-Math Sci -- "Certain problems of the magnetic hydrodynamics of a fluid of finite conduct~~[illegible]~~vity." Len, 1960 (Phys Tech Inst, Acad Sci USSR). (KL, 4-61, 186)

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308310016-9"

24.2120

31278
S/124/61/000/010/009/056
D251/D301

AUTHOR: Chekmarev, I.B.

TITLE: Influence of the anisotropy of conductivity on a stationary flow of incompressible viscous ionized gas between coaxial plates in the presence of a radial magnetic field

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 10, 1961, 7, abstract 10 B37 (Nauchno-tekhn. inform. byul. Leningr. politekhn. in-ta, 1960, no. 7, 81-84)

TEXT: To evaluate the influence of anisotropy of conductivity, a stationary flow of gas between two infinitely long co-axial tubes is considered. The flow of the gas arises as the result of the equilibrium motion of the outer non-conducting cylinder along its axis with velocity v_0. Among the simplifying assumptions are formed the magnetohydrodynamical equations of the problem in dimensionless form and the relationships expressing the boundary condi-

X

Card 1/2

tions. The solution of the system of equations obtained after transformation for the components of velocity are found in the form

$$v_z = Ar^n, \quad v_\varphi = A'r^n \tag{1}$$

where z,r, φ are cylindrical co-ordinates, and A, A' and n are the unknown quantities. Substituting (1) in the initial system of equations gives a system of equations for defining A and A', and by equating to zero the determinant of the homogeneous system of equations which has been obtained, an expression for n is found. The attraction of the boundary condition permits definition of the stress component of the magnetic field which leads to the conclusion that the anisotropy of conductivity leads to a considerable confusion in the picture of the gas flow. The quantitative estimate obtained indicates that already with the value $\omega\tau \sim 0.1$, the influence of anisotropic conductivity begins to exist. (Here ω is the Larmor frequency of an electron, and τ is its mean time of path). 7 references. /Abstracter's note: Complete translation/

Card 2/2

X

, 10.2000(A)

80261
S/040/60/024/02/29/032

AUTHOR: Chekmarev, I. B. (Leningrad)

TITLE: Unidimensional Flow of a Compressible Gas With Finite Conductivity in Presence of a Magnetic Transverse Field

PERIODICAL: Prikladnaya matematika i mekhanika, 1960, Vol. 24, No. 2, pp. 382-383

TEXT: G. S. Golitsyn and Stanyukovich (Ref. 1) give the system of equations which describes the unidimensional flow of a compressible conductive gas in a magnetic transverse field. The author integrates this system in the case where the gas is ideal, the flow is stationary, viscosity and thermal conductivity of the gas are negligible. Let

$$\varkappa = \frac{c_p}{c_v}, \quad M_0^2 = \frac{u_0^2}{\varkappa p_0/\rho_0}, \quad \rho = \frac{\mu M_0^2}{\rho_0 u_0^2}$$

let u_1 and u_2 be the roots of the equation

$$(12) \qquad u^2 - \frac{2\varkappa h}{\varkappa+1} u + \frac{2\varkappa h}{\varkappa+1} - \frac{\varkappa S}{\varkappa+1} - 1 = 0$$

where $h = 1 + \frac{1}{\varkappa M_0^2} + \frac{S}{2}$. The intensity of the magnetic field H

Card 1/2

80261

S/040/60/024/02/29/032

Unidimensional Flow of a Compressible Gas With Finite Conductivity in Presence of a Magnetic Transverse Field

and the gas velocity u are connected with each other by

$$(17) \qquad H = \sqrt{-\frac{(\varkappa+1)(u-u_1)(u-u_2)}{S\varkappa u}}$$

There is 1 Soviet reference.

SUBMITTED: November 4, 1959

Card 2/2

CHEKMAREV, I.B. (Leningrad)

Quasi-one-dimensional stationary flow of a compressible conducting gas in a channel with a constant cross section in the presence of transverse magnetic and electric fields. Prikl.mat.i mekh. 24 no.3:546-547 My-Je '60. (MIRA 13:10)
(Magnetohydrodynamics)

16.7600,24.2110

77846
SOV/57-30-3-12/15

AUTHOR: Chekmarev, I. B.

TITLE: Nonstationary Flow of Conducting Liquid in a Flat Tube in the Presence of a Transverse Magnetic Field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol 30, Nr 3, pp 338-344 (USSR)

ABSTRACT: Many investigators have recently studied various aspects of nonstationary flow of a conducting incompressible viscous fluid. The author presents an exact solution for the particular case of nonstationary flow of a conducting incompressible viscous fluid between two parallel conducting walls of infinite length. Regirer (Inzh.-fiz. zhurn., II, Nr 8, 43, 1959) recently solved the same problem but neglected the field induced outside the liquid. Let the stationary liquid with a conductivity σ, coefficient of viscosity η, density ρ, and permeability μ fill the infinitely long flat tube with parallel walls at a distance 2L. The infinitely

Card 1/7

Nonstationary Flow of Conducting Liquid in a Flat Tube in the Presence of a Transverse Magnetic Field

77846
SOV/57-30-3-12/15

thick walls are characterized by a conductivity σ^*, magnetic permeability μ and dielectric permitivity ε. There exists an external transverse magnetic field $B_6 = \mu H_0$. At the moment $t = 0$ there is a sudden constant pressure drop along the tube, which starts the motion of the liquid. The author chcse origin of cartesian coordinates midway between plates putting Y-axis perpendicular to the walls, i.e., parallel to the magnetic field and the X-axis along the motion. At $z \rightarrow + \infty$ the walls are assumed grounded. As scale factors for position vector r, liquid velocity V, time t, pressure p, magnetic field intensity H, electrical field strength E, and current density j the author takes respectively quantities

Card 2/7

$$U_0,\ \frac{L}{U_0},\ \rho U_0^2,\ H_0,\ \mu H_0 U_0,\ \frac{H_0}{L}$$

(U_0 is any characteristic velocity.) The equations appear in a dimensionless form: for the liquid region

$$\mathrm{rot}\,\mathbf{H} = \mathbf{j}, \tag{1}$$

$$\mathrm{div}\,\mathbf{H} = 0, \tag{2}$$

$$\mathrm{rot}\,\mathbf{E} = -\frac{\partial \mathbf{H}}{\partial t}, \tag{3}$$

$$\mathrm{div}\,\mathbf{E} = 0, \tag{4}$$

$$\mathbf{j} = R_m(\mathbf{E} + \mathbf{V} \times \mathbf{H}), \tag{5}$$

$$\frac{\partial \mathbf{V}}{\partial t} + (\mathbf{V}\nabla)\,\mathbf{V} = -\nabla p + S(\mathrm{rot}\,\mathbf{H} \times \mathbf{H}) + \frac{1}{R}\,\Delta\mathbf{V}, \tag{6}$$

$$\mathrm{div}\,\mathbf{V} = 0, \tag{7}$$

Nonstationary Flow of Conducting Liquid in a Flat Tube in the Presence of a Transverse Magnetic Field

77846
SOV/57-30-3-12/15

and for the region of the walls

$$\operatorname{rot} \mathbf{H}^* = \mathbf{j}^* + \beta^2 \frac{\partial \mathbf{E}^*}{\partial t}, \tag{8}$$

$$\operatorname{div} \mathbf{H}^* = 0, \tag{9}$$

$$\operatorname{rot} \mathbf{E}^* = -\frac{\partial \mathbf{H}^*}{\partial t}, \tag{10}$$

$$\operatorname{div} \mathbf{E}^* = 0, \tag{11}$$

$$\mathbf{j}^* = R_m^* \mathbf{E}^*, \tag{12}$$

where

$$\left. \begin{aligned} S = \frac{B_0^2}{\mu\rho U_0^2} = \frac{M^2}{RR_m}, \quad M^2 = \frac{B_0^2 L^2 \sigma}{\eta}, \quad \beta^2 = \varepsilon\mu U_0^2, \\ R = \frac{U_0 L\rho}{\eta}, \quad R_m = \sigma\mu U_0 L, \quad R_m^* = \sigma^*\mu U_0 L \end{aligned} \right\} \tag{13}$$

Card 4/7

are dimensionless parameters. As it is customary in magnetohydrodynamics, the author neglects displacement currents in the liquid. The author gives appropriate boundary conditions, applies Laplace transformations, uses Ohms law to determine an integration constant, and notes that to evaluate the Laplace transformed quantities U, H_y, and E_z he needs the values of these quantities in the walls of the tube. He obtains pertinent equations and finally reduces the problem of finding the velocity of the liquid and the magnetic and electric fields to the evaluation of the Rieman-Mellin integrals. In the special case when $\tau_0^* = \infty$, $R_m^* = \infty$, these integrals can be evaluated and yield

$$U = U_{\text{ст.}} + P \sum_{k=0}^{\infty} \left[\frac{u(p_k', y)\, e^{p_k' t}}{p_k' \left(\frac{dD}{dp}\right)_{p_k'}} + \frac{u(p_k'', y)\, e^{p_k'' t}}{p_k'' \left(\frac{dD}{dp}\right)_{p_k''}} \right], \qquad (58)$$

$$H_x = H_{x\,\text{ст.}} + P \sum_{k=0}^{\infty} \left[\frac{h(p_k', y) e^{p_k' t}}{p_k' \left(\frac{dD}{dp}\right)_{p_k'}} + \frac{h(p_k'', y) e^{p_k'' t}}{p_k'' \left(\frac{dD}{dp}\right)_{p_k''}} \right], \tag{59}$$

$$E_z = P \sum_{k=0}^{\infty} \left[\frac{g(p_k', y) e^{p_k' t}}{p_k' \left(\frac{dD}{dp}\right)_{p_k'}} + \frac{g(p_k'', y) e^{p_k'' t}}{p_k'' \left(\frac{dD}{dp}\right)_{p_k''}} \right], \tag{60}$$

where U_{ct} and $H_{x\ ct}$ correspond to the stationary values when $p = 0$:

$$U_{\text{ст.}} = \frac{P(\text{ch}\, M - \text{ch}\, My)}{SR_m\, \text{ch}\, M}, \quad H_{x\,\text{ст.}} = \frac{P(\text{sh}\, My - yM\, \text{ch}\, M)}{SM\, \text{ch}\, M}. \tag{61}$$

Nonstationary Flow of Conducting Liquid in a Flat Tube in the Presence of a Transverse Magnetic Field

77846
SOV/57-30-3-12/15

Various quantities appearing in these formulas are complicated expressions involving mostly quantities defined in Eq. (13). The author notes a few first nonstationary terms of the Eqs. (58) to (60) represent damped oscillations, whereas in ordinary hydrodynamics the transient period is always purely aperiodic. There are 7 references, 2 Soviet, 1 Japanese, 2 German, 1 U.K. and 1 U.S. The U.K. and U.S. references are: V. J. Rossov. NACA, TN 3971, 1957. R. S. Ong, J. A. Nichols. J. of the Aero-Space Sciences, 26, Nr 5, 313, 1959.

ASSOCIATION: Polytechnic Institut imeni M. I. Kalinin, Leningrad (Politekhnicheskiy institut imeni M. I. Kalinina, Leningrad)

SUBMITTED: October 3, 1959

Card 7/7

S/057/60/030/05/01/014
B012/B056

AUTHORS: Uflyand, Ya. S., Chekmarev, I. B.

TITLE: Investigation of a Non-steady Flow of a Conducting Liquid in a Plane Channel With Mobile Borders 21

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 5, pp. 465 - 471

TEXT: The exact solution of a one-dimensional non-steady problem of magnetohydrodynamics[1] for a plane-parallel layer in the magnetic cross field is given. The plates bounding this layer in this case move with given velocities. It is shown that, when solving similar problems, the currents induced in the medium surrounding the liquid (channel walls) must be taken into account. First, the general solution of the problem is offered, after which the problem is subdivided into a symmetric and an antisymmetric one. The problems of the type under investigation are found to be interrelated with certain boundary problems of mathematical physics, which have a mixed spectrum of eigenvalues. In conclusion, it is pointed out that in perfectly conductive channel walls the spectrum of the

Card 1/2 VB

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308310016-9"

Investigation of a Non-steady Flow of a Conducting Liquid in a Plane Channel With Mobile Borders S/057/60/030/05/01/014 B012/B056

boundary problems obtained will be discrete, which simplifies the solution considerably. There are 1 figure and 5 references: 4 Soviet and 1 English.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR Leningrad (Institute of Physics and Technology of the AS USSR, Leningrad)

SUBMITTED: December 14, 1959

✓B

Card 2/2

CHEKMAREV, I.B.

Stationary flow of a conductive liquid in an endless annular tube in connection with a radial magnetic field. Zhur. tekhn. fiz. 30 no.6:601-605 Je '60. (MIRA 13:8)

1. Leningradskiy politekhnicheskiy institut im. M.I. Kalinina.
(Magnetohydrodynamics)

S/057/60/030/008/006/019
B019/B060

AUTHOR: Chekmarev, I. B.

TITLE: Unsteady Flow of an Incompressible Viscous Conductive Liquid in a Half-space With the Existence of a Transverse Magnetic Field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 8, pp. 920 - 924

TEXT: The author studies the uniform and vibrational motion of an infinitely large, infinitely thin plate in a conductive liquid. It is assumed that this infinitely thin plate separates the upper half-space which is filled with an incompressible viscous conductive liquid from the lower half-space which is filled with a solid fixed conductor. Perpendicular to this plate there is a magnetic field of given field strength. The general expressions (9) to (14) are obtained for the velocity of the plate, the induced magnetic field strengths, and the electric field strengths. These formulas are discussed and the very simple formula (20) is given for $t \longrightarrow \infty$ for the specific case of an ideally

Card 1/2

Unsteady Flow of an Incompressible Viscous Conductive Liquid in a Half-space With the Existence of a Transverse Magnetic Field

S/057/60/030/008/006/019
B019/B060

conductive wall. Formulas (21) and (22) hold for the case of $\varepsilon \ll 1$. The author finally supplies formulas (23) to (25) for the case of $u_o(t) = u_o \sin(\omega t)$ holding for the velocity of the plate. There are 6 references: 1 Soviet, 4 American, and 1 Japanese.

ASSOCIATION: Politekhnicheskiy institut im. M. I. Kalinina Leningrad (Polytechnic Institute im. M. I. Kalinin, Leningrad)

SUBMITTED: April 8, 1960

Card 2/2

S/563/61/000/217/006/012
D234/D308

AUTHOR: Chekmarev, I. B.

TITLE: Some properties of transition regimes in magneto-hydrodynamics

SOURCE: Leningrad. Politekhnicheskiy institut. Trudy. no. 217. 1961. Tekhnicheskaya gidromekhanika, 102-108

TEXT: The author refers to his previous paper (ZhTF, 1960, v. 30, no. 8, 920), where he obtained a general solution for a special case of flow, in the form of complex integrals. Several particular values of the parameter are considered which simplify the integrands and make the evaluation of the integrals possible. Formulas are derived for these cases and graphic representation given. An asymptotic formula for cases where the parameters are arbitrary is also given as an example. There are 5 figures.

Card 1/1

26735
S/040/61/025/003/012/026
D208/D304

26.1410

AUTHOR: Chekmarev, I.B. (Leningrad)

TITLE: Steady flow of weakly ionized gas between parallel plates with anisotropic conductivity

PERIODICAL: Akademiya nauk SSSR. Otdeleniye tekhnicheskikh nauk. Prikladnaya matematika i mekhanika, v. 25, no. 3, 1961, 473 - 477

TEXT: A stationary flow of weakly ionized gas between a parallel non-conducting plate in the presence of a homogeneous, transverse magnetic field B_0 is considered. The following simplifying assumptions are made: 1) $\lambda \ll 2a$, where λ = free path, 2a - distance between plates; 2) Degree of ionization of gas is low; 3) For the ions, $\omega_i \tau_i \ll 1$ is valid; 4) The inequality $R_m = \sigma\mu V_c a \ll 1$ is valid, where V_c = mean velocity of gas in the channel. By 2), 3) and 4) the current equation is

X

Card 1/4

26735
S/040/61/025/003/012/026
D208/D304

$$j + \omega\tau(j \circ k) = \sigma(E + v \circ B) \quad (\omega\tau = \frac{B_\sigma e\tau}{m_e})$$

where k - vector in direction of the applied magnetic field. 5) Physical quantities of the gas (ρ, η, σ, μ, ε) are considered constant. From the above initial equation, equations of the problem are

$$\rho(v\nabla)v = -\nabla p + j \circ B + \eta\nabla v, \quad \text{div } v = 0 \qquad (1)$$

$$\text{curl } H = j, \quad \text{div } H = 0, \quad j + \omega\tau(j \circ k) = \sigma(E + v \circ B) \qquad (2)$$

$$\text{curl } E = 0, \quad \text{div } \epsilon E = \vartheta. \qquad (3)$$

If $B_0 = \mu H_0$ parallel to z-axis, $\partial p/\partial x = -p_x$, $\partial p/\partial y = -p_y$ and electric field components are E_{ox} and E_{oy}, then the unknowns are z dependent only, and

$$\frac{d^2u}{dz^2} + \frac{B_0}{\eta} j_y + \frac{P_x}{\eta} = 0, \quad \frac{d^2v}{dz^2} - \frac{B_0}{\eta} j_x + \frac{P_y}{\eta} = 0, \quad \frac{\partial p}{\partial z} = j_x B_y - j_y B_x \tag{4}$$

$$j_x = -\frac{dH_y}{dz}, \quad j_y = \frac{dH_x}{dz} \tag{5}$$

$$j_x + \omega\tau j_y = \sigma(E_{0x} + B_0 v), \quad j_y - \omega\tau j_x = \sigma(E_{0y} - B_0 u) \tag{6}$$

$$E_z = B_x v - B_y u, \quad dE_z / dz = \vartheta / \varepsilon \tag{7}$$

$$E_x = E_{0x}, \quad E_y = E_{0y}, \quad B_z = B_0, \quad j_z = 0, \quad w = 0 \tag{8}$$

From Eq. (6)

$$j_x = \frac{\sigma}{1 + \omega^2\tau^2} [(E_{0x} - \omega\tau E_{0y}) + B_0(\omega\tau u + v)]$$
$$j_y = \frac{\sigma}{1 + \omega^2\tau^2} [(E_{0y} + \omega\tau E_{0x}) + B_0(\omega\tau v - u)] \tag{9}$$

26735

Steady flow of weakly ionized ... S/040/61/025/003/012/026
D208/D304

is obtained. If u(z) and v(z) are known, then from (5) and (9) H_x and H_y can be found. E_z and volume density of charge are to be found from (7). Two particular cases are considered as examples. There are 4 figures and 11 references: 10 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: M.J. Lighthill, Studies on magneto hydrodynamic waves and other anisotropic wave motions. Philos. transactions Roy. Soc. London Series A. v. 252, no. 1014, 1960.

SUBMITTED: March 4, 1961

Card 4/4

CHEKMAREV, I.B. (Leningrad); UFLYAND, Ya.S. (Leningrad)

Some possibilities of accelerating the motion of a conducting liquid with the aid of mutually opposed magnetic fields. Prikl. mat. i mekh. 25 no.5:845-850 S-O '61. (MIRA 14:10)
(Magnetohydrodynamics)

CHEKMAREV, I.B.

Nonstationary flow of a conducting liquid in a flat tube in the presence of a transverse magnetic field. Zhur.tekh.fiz. 30 no.3:338-344 Mr '61. (MIRA 14:8)

1. Politekhnicheskiy institut imeni M.I.Kalinina, Leningrad.
(Magnetohydrodynamics)

40115

24.2120
26.1410

S/040/62/026/004/011/013
D409/D301

17

AUTHOR: Chekmarev, I.B. (Leningrad)

TITLE: On steady flow of a viscous conducting gas in a flat channel in the presence of crossed fields

PERIODICAL: Prikladnaya matematika i mekhanika, v. 26, no. 4, 1962, 789 - 790

TEXT: It is shown that the steady-flow problem of an ionized gas in the presence of crossed fields can be solved for any given temperature dependence of the coefficients of viscosity and of electrical conductivity. Steady flow of a conducting gas in an infinitely long, flat channel, is considered. The original system of equations is

$$\frac{d}{dy}\left(\eta \frac{du}{dy}\right) = jB_0, \qquad \frac{dp}{dy} = jB_x, \qquad p = R\rho T \tag{1}$$

$$\frac{d}{dy}\left[\eta \frac{d}{dy}\left(\frac{u^2}{2} + \frac{c_p T}{P}\right)\right] = jE_0, \qquad j = -\frac{dH_x}{dy} = \sigma(B_0 u - E_0) \qquad \left(P = \frac{\eta c_p}{\lambda}\right).$$

where η and λ are the coefficients of viscosity and of heat-conduc-
Card 1/3

tivity, respectively; it is assumed that Prandtl's number P and the specific thermal-capacity c_p are constant. After eliminating the current density j, one obtains by integration the following formula giving the connection between the temperature and the velocity of the gas

$$T = T_w + \frac{P}{c_p}\left(\frac{E_o}{B_o} u - \frac{u^2}{2}\right) \qquad (5)$$

where T_w is the temperature of the walls. After further calculations, one obtains a formula relating the friction τ to the velocity u. Integration of this formula yields the sought-for relationship between the velocity and the y-coordinate

$$y = \pm\left(a - \int_0^u \frac{\tau(u)du}{J(u, u_m)}\right) \qquad (7)$$

where a is half the channel height. Setting in Eq. (7), y = 0, u = u_m, one obtains either a formula for u_m, with given a, or a formu-

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308310016-9"

la for a, with given u_m (u_m denotes the maximum gas-velocity). After calculations, one obtains a formula for the velocity distribution

$$u = u_0\left(1 - \frac{\mathrm{ch}\ My/a}{\mathrm{ch}\ M}\right), \qquad (11)$$

where M is Hartmann's number. The obtained solution can be readily extended to variable c_p. The most important English-language reference reads as follows: W.B. Bush, Compressible flat plate boundary layer flow with an applied magnetic field. J. Aerospace Sciences, 1960, v. 27, no. 1, 49 (Russian transl. in Sb. Mekhanika, IL, 1960, no. 6, p. 89).

SUBMITTED: March 26, 1962

CHEKMAREV, I.B.

Resonance phenomena in forced oscillations of a layer of incompressible conducting liquid in a transverse magnetic field. Zhur. tekh. fiz. 32 no.12:1477-1479 D '62. (MIRA 16:2)

1. Fiziko-tekhnicheskiy institut imeni A.F. Ioffe AN SSSR, Leningrad.

(Hydrodynamics) (Oscillations)
(Magnetic fields)

L 17040-63 FCS(f)/EPA(b)/EWT(1)/EWT(m)/BDS/ S/207/63/000/002/018/025
ES(v)/ES(w)-2 AEDC/AFFTC/ASD/AFMDC/ESD-3/SSD Pd-4/Pe-4/Pab-4/Pi-4/Po-4
RM/RH

86

AUTHOR: Chekmarev, I. B. and Chang Hsing-mo (Leningrad)

TITLE: Laminar boundary layer in electrolyte solution in the presence of crossed magnetic and electric fields

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 2, 1963, 151-153

TEXT: A plane laminar boundary layer of a semi-infinite plate in a flow of incompressible fluid of a given velocity is investigated. A constant concentration of electrolyte is maintained on the plate surface and results in a diffusion creating an electrically conducting layer near the plate which, with the aid of the outer magnetic and electric fields, permits the control of the velocity distribution in the boundary layer. A case of low concentration is analyzed in detail. Here the viscosity and density of the fluid can be considered constant, and the electric conductivity is a linear function of concentration. Effects of induction are disregarded, and only the Ohm law is used in the determination of the electrolyte flow. The velocity distribution calculation has been made for Schmidt numbers between $S = 10^3$ and $S = 1$, and obtained results have been summarized in

Card 1/3

L 17040-63 S/207/63/000/002/018/025

0

Laminar boundary layer...

Fig. 2. It can be noted that at $S = 10^3$ with the thickness of diffusion of about one tenth of the thickness of the viscous boundary layer, the changes in the velocity profile are insignificant while in case of $S = 1$, with both thicknesses about equal, the effect of the electromagnetic force on the velocity distribution appears to be quite strong. The authors present the results of an automodel solution for the $S = 10^3$ value of the Schmidt number and the $P = 7$ Prandtl number, and various values of other pertinent parameters. There are 5 figures.

Card 2/3

CHEKMAREV, I.B. (Leningrad); SHAKHNOV, I.I. (Leningrad)

Helical motion of a conducting gas between coaxial permeable cylinders in the presence of a longitudinal electric field. PMTF no. 6:3-6 N-D '63. (MIRA 17:7)

CHEKMAREV, I.B. (Leningrad)

Effect of the anisotropy of electroconductivity on the flow of a viscous fluid in the entrance region of a flat channel. Prikl. mat. i mekh. 27 no.3:532-534 My-Je '63. (MIRA 16:6)

(Magnetohydrodynamics)

ACCESSION NR: AP4028950 S/0057/64/034/004/0630/0636

AUTHOR: Say*slov, Yu.N.; Chekmarev, I.B.

TITLE: Magnetohydrodynamic boundary layer in a high temperature flow past a porous plate admitting additional easily ionizable vapor

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.4, 1964, 630-636

TOPIC TAGS: magnetohydrodynamics, magnetohydrodynamic boundary layer, magnetohydrodynamic friction reduction, magnetohydrodynamic nozzle cooling

ABSTRACT: The theoretical treatment is given of the boundary layer formed under the following conditions. A hot inert gas flows past a porous plate in the presence of a magnetic field. A flux of the same inert gas containing a small admixture of alkali metal vapor is forced in through the porous plate. The temperature is such that the metal vapor is ionized but the inert gas is not. The purpose of the study is to investigate possibilities of reducing friction and heat flux to the confining wall. In the calculations the diffusive separation of the alkali metal atoms, ions, and the resulting electrons is neglected, and these components are assumed to be in thermal equilibrium. The equations are expanded in powers of the magnetic field, and on-

Card 1/2

ACCESSION NR: AP4028950

ly the first two terms are retained. The zeroth order equation of motion reduces to Blasius' equation, for which tabulated solutions are available, and the zeroth order energy and diffusion equations are solved. The first order equations were solved numerically for a temperature of 5000°K, a pressure of 1 atm, and a velocity of 1000 m/sec. Results are presented graphically for two values of the vapor-gas flux through the plate and various values of the magnetic field. It is concluded that a considerable reduction of surface friction and heat flux to the wall can be achieved by the method discussed. An approximate equation for the degree of ionization employed in a somewhat similar calculation by E. I. Andriankin (Trudy. Moskovsk. fiziko-tekhn. inst. No. 8, 119, 1962) is criticized as inadequate. Orig. art. has: 36 formulas and 4 figures.

ASSOCIATION: Fiziko-tekhnicheskoy institut im. A. F. Ioffe AN SSSR Leningrad (Physico-technical Institute, AN SSSR)

SUBMITTED: 11May63 DATE ACQ: 28Apr64 ENCL: 00

SUB CODE: PH NR REF SOV: 005 OTHER: 003

Card 2/2

L 14234-66 EWT(1)/T IJP(c)

ACC NR: AP5024905 UR/0382/65/000/003/0076/0080

16

B

AUTHOR: Drobyshevskiy, E.M.; Chekmarev, I.B.

ORG: None

21,44,55

TITLE: Rotation of a weakly ionized gas in a homopolar magnetohydrodynamic generator with a radial magnetic field

SOURCE: Magnitnaya gidrodinamika, no. 3, 1965, 76-80

TOPIC TAGS: magnetohydrodynamic theory, plasma rotation

ABSTRACT: Azimuthal motion of a rarified weakly ionized plasma in crossed (radial magnetic and axial electric) fields between two coaxial dielectric cylinders is discussed. Plasma and glow result from the passage of an axial electric current. The gas density is assumed low enough to have the main loss of charged particle occur due to diffusion to the walls, yet sufficiently high to justify a hydrodynamic analytical approach. At a constant gas density ρ, and viscosity coefficient η, the gas motion is described by the equation (1)

$$\rho(\mathbf{v}\nabla)\mathbf{v}=-\nabla p+\mathbf{j}\times\mathbf{B}+\eta\Delta\mathbf{v}, \quad \operatorname{div}\mathbf{v}=0, \tag{1}$$

where: v - gas velocity, j - current density and B - magnetic field strength. Assumption of a negligible magnetic Reynold's number ($R_m \ll 1$) permits to consider B as

$$B \equiv B_r = B_0 R_2/r \tag{2}$$

UDC 533.95:538.4

Card 1/2

ACC NR: AP5024905

where R_2 is the radius of the outer cylinder. Several additional assumptions, including negligible Hartman's number, M, - permit to write a system of equations for the determination of current density from the concentrations of the n_e and n_i charged particles. Subsequent analysis leads to expressions for diffusion flow and for relations between temperature, ion energy and electric field strength. An example of gas discharge in molecular hydrogen as the plasma is worked out. In particular, the distribution of charged particle densities, the rotational gas velocity and the axial current density distribution are computed electronically as a function of the radius ratio $x = r/R_2$ - for various magnetic field strengths. Due to nonuniformity of the magnetic field, the temperature of electrons is a function of the radius variable, and the necessity of applying a strong electric field causes the ionic component to gain energy of directional movement in the axial direction, of the order of 1 - 10 eV. Orig. art. has 3 figs., 22 formulas.

SUB CODE: 20 Subm DATE: 22Nov64/ ORIG REF: 003 Oth REF: 001

Card 2/2

L 5385-66 EWT(1)
ACC NR: AP5027281 SOURCE CODE: UR/0207/65/000/005/0120/0123

AUTHORS: Uflyand, Ya. S. 44,55 (Leningrad); Chekmarev, I. B. 44,55 (Leningrad)

ORG: none

37
B

TITLE: On electric conductivity change of ionized gas 21,44,55 in the initial part of a plane channel

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1965, 120-123

TOPIC TAGS: ionized gas, seeded gas, temperature distribution, equilibrium ionization, Laplace transform

ABSTRACT: The ionization process and temperature distribution in the entrance section of a plane, infinite channel ($x \geq 0, |y| < a$) is studied analytically. At time $t = 0$ and $x = 0$ an easily ionizable seeding gas is added to the flow at the rate $n = n_0 f(t)$ and temperature $T = T_0 g(t)$. The wall temperature at $t = 0$ is assumed to be T_0 which is the same temperature as that of the incoming gas. The governing flow equations are given by the species and energy conservation laws

Card 1/3

L 5385-66
ACC NR: AP5027281

$$\frac{\partial n}{\partial t} + v\frac{\partial n}{\partial x} = D\frac{\partial^2 n}{\partial y^2}, \quad \frac{\partial T}{\partial t} + v\frac{\partial T}{\partial x} = \frac{\lambda}{\rho c_p}\frac{\partial^2 T}{\partial y^2},$$

δ

and the wall conduction equation

$$\frac{\partial T_w}{\partial t} = \frac{\lambda_w}{\rho_w c_w}\frac{\partial^2 T_w}{\partial y^2}.$$

These equations are nondimensionalised as follows

$$\beta = \frac{n}{n_0}, \quad \theta = \frac{T - T_0}{T_0}, \quad \tau = \frac{vt}{a}, \quad \xi = \frac{x}{a}, \quad \eta = \frac{y}{a}.$$

The ionisation rate is governed by the Saha equation, and the electric conductivity is expressed by the simplified expression

$$\sigma = \frac{n_e e^2 \tau_e}{m_e} \qquad \left(\tau_e = \frac{l_e}{v_e}, \quad v_e = \frac{\sqrt{8kT}}{\sqrt{\pi m_e}}\right).$$

A formal solution is obtained by using Laplace transforms. Then the analysis is simplified by assuming $f(\tau) = 1$ and $g(\tau) = m$. For the special case of $\alpha = 0$

$$\alpha = \frac{1}{\varkappa\sqrt{\delta_w}}$$

the temperature distribution is given by

Card 2/3

L 5385-66
ACC NR: AP5027281

$$\theta|_{\tau>\xi} = \frac{4}{\pi}(m-1)\sum_{k=0}^{\infty}\frac{(-1)^k}{2k+1}\cos\frac{2k+1}{2}\pi\eta\exp\left[-\frac{\xi}{\delta}\left(\frac{2k+1}{2}\pi\right)^2\right].$$

It is shown that the physical properties of the channel walls do not affect the electric conductivity in the channel core. A second example is also considered where the temperature field is assumed to be oscillating with $g(\tau) = 1 + \nu \sin \omega\tau$. Orig. art. has: 28 equations.

SUB CODE: ME, EM SUBM DATE: 06Apr65/ ORIG REF: 004/ OTH REF: 001

Card 3/3

L 2458-66 EWT(1)/EWP(m)/EPA(sp)-2/EPA(w)-2/T-2/EWA(m)-2 IJP(c)

ACCESSION NR: AP5020718 UR/0057/65/035/008/1359/1363

44,55

AUTHOR: Shakhnov, I. I.; Chekmarev, I. B. 44,55

78
75
B

TITLE: Influence of electric and magnetic fields on the electron temperature in a magnetogasdynamic channel 44,55

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 8, 1965, 1359-1363

TOPIC TAGS: plasma flow, plasma device, electric energy conversion, electric field, magnetic field, electron temperature, magnetogasdynamics

ABSTRACT: The authors calculate the variations of electron temperature during one-dimensional flow of a weakly ionized plasma in crossed electric and magnetic fields. The calculations were undertaken because of their interest in connection with plasma energy converters. The plasma is assumed to consist of two components with widely differing ionization potentials and to flow transversely to the magnetic field. The electric field is assumed to be perpendicular to the magnetic field but not necessarily to the flow velocity. The hydrodynamic equations for the electron gas with electron diffusion and source terms are quoted from Chapman and Cowling's monograph and are simplified by neglecting electron inertialand vis-

L 2458-66

ACCESSION NR: AP5020718

3

cosity. The electron source function is fixed by assuming equilibrium between the electrons and the atoms and ions of the easily ionized plasma component. With these equations there is calculated the ultimate electron temperature in the flowing plasma and also the behavior of an initially isothermal plasma during transition to the asymptotic state. It is found that the flow in crossed fields considerably increases the electron temperature above the ion temperature. Numerical results for a mixture of argon and potassium vapor are presented graphically, and it is concluded that the optimum Mach number is greater than that calculated by D.T. Swift-Hook and I.K.Wright (J. Fluid Mech., 5, 1, 97, 1963). Orig. art. has 30 formulas and 2 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A.F.Ioffe AN SSSR, Leningrad (Physico-technical Institute, AN SSSR) 44,55

SUBMITTED: 17Nov64 ENCL: 00 SUB CODE: ME

NR REF SOV: 003 OTHER: 003

BVK

Card 2/2

L 3619-66 EWT(1)/ETC/EWG(m)/EPA(w)-2 IJP(c) AT

ACCESSION NR: AP5024030 UR/0057/65/035/009/1558/1567

AUTHOR: Drobyshevskiy, E. M.; Chekmarev, I. B. 44,55 44,55

75
69
B

TITLE: The positive column in the inverse homopolar device

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 9, 1965, 1558-1567

TOPIC TAGS: discharge plasma, electric field, magnetic field, plasma conductivity, plasma stability, plasma temperature, mathematic physics, magnetchydrodynamics, hydrogen plasma

ABSTRACT: The "direct" homopolar device consists of two coaxial cylindrical electrodes with a radial electric field and an axial magnetic field in the plasma-filled annular space between them. The "inverse" homopolar device discussed in this paper has cylindrical dielectric walls, a radial magnetic field, and an axial electric field. The plasma is assumed to be weakly ionized, so that collision of electrons and ions are almost entirely with neutral atoms. The magnetic field strength is assumed to be such that the electron Larmor frequency is much higher than the electron collision frequency and the ion Larmor frequency is much lower than the ion collision frequency. The plasma is treated in the hydrodynamic approximation. The equations were solved on a computer for the case of a hydrogen

Card 1/2

L 3619-66

ACCESSION NR: AP5024030

plasma, and the results are presented graphically. At high magnetic field strengths the ion temperature can exceed the electron temperature. When this occurs the discharge becomes unstable and the electric field strength required to maintain the discharge increases. This theoretically derived instability is employed to explain the instability of the homopolar device observed experimentally by K.V.Donskoy and E.M. Drobyshevskiy (ZhTF, 35, 84, 1965). "The authors express their gratitude to V. Ye. Golant for useful discussion and much valuable advice." Orig. art. has: 52 formulas and 6 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A.F.Ioffe AN SSSR, Leningrad (Physico-technical Institute, AN SSSR)

SUBMITTED: 07Jan65 ENCL: 00 SUB CODE: ME

NO REF SOV: 007 OTHER: 004

Card 2/2

L 10661-66 EWT(1)/EWA(m)-2 IJP(c) GG

ACC NR: AP5028310 SOURCE CODE: UR/0057/65/035/011/1978/1983

44,55 16 DF

AUTHOR: Chekmarev, I.B. 68 65

44,55

ORG: Physico-technical Institute im. A.F.Ioffe, AN SSSR, Leningrad (Fiziko-tekhnicheskiy institut AN SSSR) B

21,44,55

TITLE: Glow discharge between coaxial dielectric cylinders in a longitudinal electric and a radial magnetic field

21,44,55

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 11, 1965, 1978-1983

TOPIC TAGS: discharge l plasma, glow discharge, ion distribution, electron distribution, velocity distribution, plasma magnetic field, radial magnetic field, electric field

21,44,55

ABSTRACT: The electron and ion density and velocity distributions in a glow discharge plasma within the annular space between two coaxial nonconducting cylindrical walls in the presence of a radial magnetic field are calculated in a hydrodynamic approximation. The collision frequency of electrons with neutrals is assumed to be much lower than the electron Larmor frequency, and the collision frequency of ions with neutrals is assumed to be much higher than the ion Larmor frequency. The plasma is assumed to be weakly ionized, and the pressure is assumed to be so low that volume recombination can be neglected and so high that the hydrodynamic approximation is valid. Collisions between ions and electrons are neglected, and every collision between an ion and a neutral particle is assumed to result in charge exchange. The calculations are per-

Card 1/2 UDC: 537.525

L 10661-66

ACC NR: AP5028310

3

formed by a perturbation technique based on the smallness of Hartman's number, the unperturbed distribution functions being assumed to be Maxwellian. As an example, the results are presented of a numerical calculation for a 10 A glow discharge in molecular hydrogen within a 33.1 cm radius tube at a pressure of 13.33 N/m^2 and a temperature of 1000° K. The charge exchange cross section for both electrons and ions with neutral particles was assumed to be 10^{-23} cm^2 and it was assumed that du/dT_e= 0.6 x 10^{-6} $degree^{-1}$, where u is the average fractional energy transfer in a collision between an electron and a neutral particle, and T_e is the electron temperature. Calculations were made for a radial magnetic field of 0.01 Wb/m^2 and for no magnetic field. The longitudinal electric field required to maintain the discharge was found to be 13.2 V/cm in the presence of the magnetic field and 8.8 V/cm with no magnetic field. The presence of the magnetic field caused a considerable increase in the electron density, owing to the decrease of the diffusion velocity, and shifted the position of maximum electron density slightly outward. The ion velocity distribution was highly anisotropic in the presence of the magnetic field, the transverse and longitudinal ion temperatures being 10^3 and 1.588 x 10^5 °K, respectively. The author thanks V. I. Perel' for a valuable discussion. Orig. art. has: 32 formulas, 1 figure, and 1 table 44,55

SUB CODE: 20 SUBM DATE: 19Apr65/ ORIG. REF: 005 OTH REF: 002

Card 2/2

CHEKMAREV I.G. (Ryazan)

CHEKMAREV, I.G. (Ryazan')

[redacted]

Therapy of burns. Sov.med.19 no.8:85-86 Ag '55 (MLRA 8:10)
(BURNS, therapy
water bath)
(HYDROTHERAPY, in various diseases
burns)

VATKIN, Ya.L., kand.tekhn.nauk; KRONFEL'D, I.D., inzh.; CHEMAREV, L.A., inzh.; ROZHNOV, S.V., inzh.

Investigating pressure on the rolls and power consumption in tube rolling on a continuous mill with long mandrels. Nauch. trudy DMI no.39:252-277 '60. (MIRA 13:10)
(Pipe mills--Electric driving)

CHEKMAREV, M.A., inzh.-ekonomist; DENISOV, V.M., dots.

Effect of the equipment used of the operation of vulcanizing presses and of intensified processes of vulcanization on the lowering of the cost of molded goods for engineering uses. Trudy LIEI no.25:97-102 '59. (MIRA 12:11)
(Rubber goods--Costs) (Vulcanization)

PETROV, V.A., kand.tekhn.nauk, dotsent; CHEKMAREV, M.A.

B.L.Aizenberg; on his [illegible]0th birthday. Izv. vys. ucheb. zav.; energ. 6 no.2:112 F '63. (MIRA 16:3)
(Aizenberg, Boris L'vovich, 1902-)

PIROZHKOV, Fedor Vasil'yevich; CHEKMENEV, N.M., red.

[Automatic block system networks of run sections] Peregonnye skhemy avtomaticheskoi blokirovki. Moskva, Transport, 1964. 163 p. (MIRA 17:7)

CHEKMAREV, N.P.

GUSEV, S.O.; CHEKMAREV, N.P.; STREL'TSOV, M.M.

Publicising experience in operating trains using mechanical refrigeration and proposals for improving their use. Vest.TSNII MPS 15 no.2:61 S '56. (MIRA 9:12)
(Refrigerator cars)

19

16(1) 05265

SOV/140-59-5-21/25

AUTHOR: Chekmarev, T.V.

TITLE: The Reduction of the Cauchy Problem for a System of Two Partial Differential Equations With Two Unknown Functions to a System of Integral Equations

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, Nr 5, pp 197-207 (USSR)

ABSTRACT: Under numerous assumptions (e.g. F and Φ shall have continuous partial derivatives with respect to all arguments) and many shortening notations the author reduces the Cauchy problem for the system

$$F(x,y,z,w,p,q,u,v) = 0$$

$$\Phi(x,y,z,w,p,q,u,v) = 0, \quad (1)$$

where $p = \frac{\partial z}{\partial x}$, $q = \frac{\partial z}{\partial y}$, $u = \frac{\partial w}{\partial x}$, $v = \frac{\partial w}{\partial y}$, to a system of integral equations. The legality of the reduction carried out at first formally is proved with the aid of a theorem of Lewy [Ref 1]. There is 1 non-Soviet reference, which is German.

ASSOCIATION: Muromskiy pedagogicheskiy institut (Murom Pedagogical Institute)

SUBMITTED: December 9, 1957

Card 1/1

16(1)

06326

AUTHOR: Chekmarev, T.V.

SOV/140-59-6-27/29

TITLE: Solution of a Hyperbolic System of Two Partial Differential Equations With Two Unknown Functions

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, Nr 6, pp 220-228 (USSR)

ABSTRACT: The present paper is a direct continuation of [Ref 1]. It is shown that the solution of the Cauchy problem for the system

$$(1) \quad \begin{cases} F(x,y,z,w,p,q,u,v) = 0 \\ \Phi(x,y,z,w,p,q,u,v) = 0 \end{cases}$$

of [Ref 1] under certain conditions can be obtained as a solution of the systems of integral equations (30) or (30') in parametric form. One theorem and an example are given. There are 2 Soviet references.

ASSOCIATION: Muromskiy pedagogicheskiy institut (Murom Pedagogical Institute)

SUBMITTED: December 9, 1957

Card 1/1

B

CHEKMAROV, T.V. (Gor'kiy)

Some partial cases of the solution of a certain system of partial differential equations. Izv. vys. ucheb. zav.; mat no.4:168-178 '63. (MIRA 16:10)

CHEKMAREV, T.V. (Gor'kiy)

Solution of a second-order hyperbolic differential equation by reducing it to a system of integral equations. Izv. vys. ucheb. zav.; mat. no.5:146-152 '63. (MIRA 16:11)

BULAKH, Vladimir Leont'yevich; SOLOMENTSEV, Nikolay Afanas'yevich; CHEKMAREV, Viktor Aleksandrovich; BIRYUKOV, V.K., redaktor; SOLOVEYCHIK, A.A., tekhnicheskiy redaktor

[Fundamentals of hydrology and agricultural land improvement] Osnovy gidrologiii sel'skokhoziaistvennykh melioratsii. Leningrad, Gidrometeorologicheskoe izd-vo, 1955. 311 p. [Microfilm] (MIRA 9:3)

(Agricultural engineering) (Hydrology)

SOLOMENTSEV, Nikolay Afanas'yevich; L'VOV, Andrey Mikhaylovich; SIMIRENKO, Sof'ya L'vovna; CHEKMAREV, Viktor Aleksandrovich; SHATILINA, M.K., red.; SERGEYEV, A.N., tekhn. red.

[Land hydrology] Gidrologiia sushi. [By] N.A.Solomentsev i dr. Leningrad, Gidrometeor. izd-vo, 1961. 448 p. (MIRA 15:3)
(Hydrology)

CHEKMAREV, V. A.

"Scalding-Padding Machine," Tekst. Prom., 12, No.6, 1952

CHEKMAREV, V. A.

"Two-Plate Press for Packing Finished Wares," Tekst.Prom.,12, No.8, 1952

CHEKMAREV, V. A.

Carbonization of burry wools. G. P. Shaposhnikov and V. A. Chekmarev. *Tekstil. Prom.* 14, No. 5, 11-13(1954).—Vegetable matter contaminating the wool (I) is removed by steeping I at room temp. for 15-30 min. in 20 pts. H_2O contg. H_2SO_4 45 g./l. and a wetting agent 2-5 g./l., centrifuging, drying at 80-95°, and finally carbonizing at 85-90°. I is then dusted and washed with H_2O until 1% H_2SO_4 remains on the fiber, which is neutralized by addn. of NH_4OH 2-3%.

Elizabeth Barabash

CHEKMAREV, V.A.

[redacted]

Efforts to avoid defects in fabrics in the cloth fulling mill.
Tekst.prom. 17 no.2:52-54 F '57. (MLRA 10:2)

1. Zaveduyushchiy otdelochnym proizvodstvom Klintsovskoy sukonnoy fabriki imeni Kominterna.
(Textile finishing)

CHEKMAREV, V.A.; FAYER, S.F.

Practice in the application of the new form of recording the movement of the fabric through finishing processes. Tekst.prom. 22 no.2:11-12 F '62. (MIRA 15:3)

1. Nachal'nik otdelochnogo proizvodstva Klintsovskoy tonkosukonnoy fabriki imeni Kominterna (for Chekmarev). 2. Nachal'nik krasil'nogo tsekha Klintsovskoy tonkosukonnoy fabriki imeni Kominterna (for Fayer).

(Textile finishing)

CHEKMAREV, V.A.; DMITROCHENKO, A.K., slesar'

Machine for fiber feeding to the dyeing apparatus. Tekst.prom. 23 no.1:18-19 Ja '63. (MIRA 16:2)

1. Zaveduyushchiy krasil'no-otdelochnym proizvodstvom Klintsovskoy tonkosukonnoy fabriki imeni Kominterna (for Chekmarev). 2. Otdel glavnogo mekhanika Klintsovskoy tonkosukonnoy fabriki imeni Kominterna (for Dmitrochenko).
(Textile machinery)

PASTUKHOV, A.D.; CHEKMAREV, V.A.; UCHAMEYSHVILI, Z.V.

Using an emulsion without olein for oiling the blends in worsted cloth manufacture. Tekst.prom. 22 no.6:47-48 Je '62. (MIRA 16:5)

1. Glavnyy inzh. Klintsovskoy tonkosukonnoy fabriki imeni Kominterna (for Pastukhov). 2. Nachal'nik otdelochnogo proizvodstva Klintsovskoy tonkosukonnoy fabriki imeni Kominterna (for Chekmarev). 3. Zaveduyushchiy fiziko-khimicheskoy laboratoriyey Klintsovskoy tonkosukonnoy fabriki imeni Kominterna (for Uchameyshvili).

(Wool and worsted manufacture)

BULAKH, Vladimir Leont'yevich [deceased]; SOLOMENTSEV, Nikolay Afanas'yevich; CHEKMAREV, Viktor Aleksandrovich; ANDREYANOV, V.G., otv. red.; SHATILINA, M.K., red.; ALEKSEYEV, A.G., tekhn. red.

[Fundamentals of hydrology and land improvement] Osnovy gidrologii i sel'skokhoziaistvennykh melioratsii. 2., dop. izd. Leningrad, Gidrometeoizdat, 1963. 366 p. (MIRA 16:10)

(Hydrology) (Irrigation) (Drainage)

CHEKMAREV, V.A.

Device for determining the wear resistance of textile fabrics. Tekst. prom. 23 no.6:72-73 Je '63. (MIRA 16:7)

1. Zaveduyushchiy krasil'no-otdelochnym proizvodstvom Klintsovskoy sukonnoy fabriki imeni Kominterna.
(Textile fabrics--Testing)

CHEKMAREV, V.A.

Machine for cleaning, padding and inspecting fabrics after washing
Tekst. prom. 23 no.9:75-76 S '63. (MIRA 16:10)

1. Nachal'nik otdelochnogo proizvodstva Klintsovskoy tonkosukonnoy fabriki imeni Kominterna.
(Textile machinery)

CHEKMAREV, Ya.

BRID'KO, I., geroy sotsialisticheskogo truda; CHEKMAREV, Ya., geroy sotsialisticheskogo truda; MOSENZON, I., redaktor; LAPCHENKO, K., tekhnicheskiy redaktor.

[Work cooperation between miners of the Donets Basin and the Kuznetsk Basin] Tvorcheskoe sodruzhestvo gorniakov Donbassa i Kuzbassa. Kiev, Gos. izd-vo polit. lit-ry USSR, 1954. 181 p. (MLRA 8:2)
(Kuznetsk Basin--Coal miners) (Donets Basin--Coal miners)

CHEKMAREV, Ya., geroy sotsialisticheskogo truda.

Cyclic work schedule is the basis of steady work. Mast.ugl. 3 no.3: 7-8 Mr '54. (MLRA 7:4)

1. Nachal'nik Uchastka shakhty im. Kirova kombinata Kuzbassugol'. (Coal mines and mining)

CHEKMAREV, Yakov Fedorovich, sostavitel'; BOGDANOV, I.M., uchitel' matematiki; [redacted]'; GMUSOV, N.V., uchitel'; PAVUK, T.I., uchitel'-nitsa; ZDRAVOMYSLOVA, N.K., uchitel'nitsa matematiki; BORISOV, S.A, uchitel' matematiki; KITAYGORODSKIY, P.I., uchitel' matematiki.

[Teaching mathematics in the schools for young workers] Iz opyta prepodavaniia matematiki v shkolakh rabochei molodezhi; sbornik statei. Moskva, Izd-vo Akademii pedagog. nauk RSFSR, 1952. 128 p. (MLRA 6:5)

1. Akademiya pedagogicheskikh nauk RSFSR, Institut metodov obucheniya. 2. Shkola rabochey molodyezhi No 52, Moskva (for Bogdanov). 3. Shkola rabochey molodyezhi No 31, Leningrad (for Model'). 4. Shkola rabochey molodyezhi No 4, Moskva (for Gmusov). 5. Shkola rabochey molodyezhi No 65, Moskva (for Pavuk). 6. Shkola rabochey molodyezhi No 71, Leningrad (for Zdravamyslova). 7. Shkola rabochey molodyezhi No 32, Moskva (for Borisov). 8. Shkola rabochey molodyezhi No 45, Moskva (for Kitaygorodskiy).
(Mathematics--Study and teaching)

CHEKMAREV, Ya. F.

Metodika prepodavaniia arifmetiki. Posobie dlia ped. uchilishch [Methods in teaching arithmetic; manual for pedagogical schools]. Izd. 9-e. Moskva, Uchpedgiz, 1952. 271 p.

SO: Monthly List of Russian Accessions, Vol 7, No 4, July 1954.

CHEKMAREV, Yakov Fedorovich, zasluzhennyy uchitel' shkol RSFSR.

[Methods of teaching arithmetic in the fifth and sixth grades of working-youth schools] Metodika obucheniia arifmetiki v piatykh i shestykh klassakh shkol rabochei molodezhi. Moskva, Izd-vo Akademii pedagog. nauk RSFSR, 1953. 441 p. (MLRA 7:1)

(Arithmetic--Study and teaching)

CHEKMAREV, Ya.F.

IGNAT'YEV, N.I.; CHEKMAREV, Ya.F.

[Teaching mathematics and arithmetic methods in pedagogical schools] Prepodavanie matematiki i metodiki arifmetiki v pedagogicheskom uchilishche. Moskva, Uchpedgiz, 1954. 48 p. (MIRA 8:2D)

CHEKMAREV, YAKOV FEDOROVICH

TULINOV, Boris Alekseyevich; CHEKMAREV, Yakov Fedorovich; SIDOROVA, L.A., redaktor; SHIKIN, S.T., tekhnicheskiy redaktor

[Arithmetic; for pedagogical schools] Arifmetika; dlia pedagogicheskikh uchilishch. Izd. 5-oe. Moskva, Gos. uchebno-pedagog. izd-vo Ministerstva prosveshcheniia RSFSR, 1955. 285 p. (MLRA 8:7)
(Arithmetic)

TULINOV, Boris Alekseyevich; ~~CHEREMANEV~~, Yakov Fedorovich; DOLGOPOLOV, V.G., red.; KOVALENKO, V.L., tekhn.red.

[Arithmetic for pedagogical schools] Arifmetika; dlia pedagogicheskikh uchilishch. Izd.6. Moskva, Gos.uchebno-pedagog.izd-vo M-va prosv. RSFSR, 1961. 295 p. (MIRA 14:6)
(Arithmetic)

CHEKOTILLO, A.M., kand. tekhn. nauk; TSVID, A.A., kand. tekhn. nauk; STOTSENKO, A.V., doktor geogr. nauk, prof., red.; STRASHNYKH, V.P., red. izd-va; BOROVNEV, N.K., tekhn. red.

[Recommendations for controlling ice formation]Rekomendatsii po bor'be s nalediami. Utv. Gos.komitetom Soveta Ministrov RSFSR po delam stroitel'stva 23 iiunia 1962.g. Moskva, Gosstroiizdat, 1962. 41 p. (MIRA 16:1)

1. Russia (1923- U.S.S.R.)Gosudarstvennyy komitet po delam stroitel'stva.
(Ice on rivers, lakes, etc.)
(Civil engineering--Cold weather conditions)

CHEKMAREV, Yakov Fedorovich, zasl. uchitel' shkoly RSFSR, kand. ped. nauk; SNIGIREV, Valerian Timofeyevich; RODIONOVA, Z.A., red.; SMIRNOVA, M.I., tekhn. red.

[Methodology of teaching arithmetic]Metodika prepodavaniia arifmetiki; posobie dlia pedagogicheskikh uchilishch. Izd.12. Moskva, Uchpedgiz, 1962. 327 p. (MIRA 16:1)
(Arithmetic--Study and teaching)

CHEKMAREV, Yakov Fedorovich; UMANSKIY, G.S., red.; SMIRNOVA, M.I., tekhn. red.

[Methodology of teaching arithmetic in the fifth and sixth grades of eight-year schools]Metodika prepodavaniia arifmetiki v V-VI klassakh vos'miletnei shkoly. Moskva, Uchpedgiz, 1962. 410 p. (MIRA 15:9)

(Arithmetic--Study and teaching)

CHEKMAREV, Yakov Fedorovich; TULIKOV, Boris Alekseyevich; NIKITINA, N.I., red.

[Arithmetic for normal schools] Arifmetika dlia pedagogicheskikh uchilishch. Izd.8. Moskva, Prosveshchenie, 1965. 302 p. (MIRA 18:6)

ZHDANOVICH, Ye.S.; GALKIN, A.F.; CHEKMAREVA, I.B.; BAULINA, G.A.; PREOBRAZHENSKIY, N.A.

Production of pyridinecarboxylic acid. Trudy VNIVI 8:11 '61. (MIRA 14:9)

1. Laboratoriya sinteza vitaminov gruppy B Vsesoyuznogo nauchno-issledovatel'skogo vitaminnogo instituta.
(Pyridinecarboxylic acid)

ZHDANOVICH, Ye.S.; CHEKMAREVA, I.B.; NOVOPOKROVSKAYA, T.S.; LISNYANSKIY, I.M.; PREOBRAZHENSKIY, N.A.

Production of the amide of nicotinic acid (through esters). Trudy VNIVI 8:22 '61.
(MIRA 14:9)

1. Laboratoriya sinteza vitaminov gruppy B Vsesoyuznogo nauchno-issledovatel'skogo vitaminnogo instituta.
(Amides) (Esterification) (Nicotinic acid)

KOCHKIN, D.A.; CHEKMAREVA, I.B.

Organotin and organolead derivatives of nicotinic acid. Zhur.ob.khim. 31 no.9:3010-3013 S '61. (MIRA 14:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy vitaminnyy institut.
(Nicotinic acid) (Organometallic compounds)

ZHDANOVICH, Ye.S.; CHEKMAREVA, I.B.; PREOBRAZHENSKIY, N.A.

Preparation of nitrile and amide of nicotonic acid. Zhur.ob. khim. 31 no.10:3272-3274 O '61. (MIRA 14:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy vitaminnyy institut.
(Nicotinamide) (Nicotinonitrile)

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308310016-9"

27.3300
27-1100 also 2209

28651
S/020/61/139/006/018/022
B103/B101

AUTHORS: Kochkin, D. A., Verenikina, S. G., and Chekmareva, I. B.

TITLE: Organotin and organolead derivatives of some nitrogen-containing acids

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 6, 1961, 1375-1378

TEXT: The authors synthesized organotin and organolead esters of methacrylic acid (D. A. Kochkin, V. N. Kotrelev, G. N. Kuznetsova et al. Vysokomolekul. soyed., 1, 1507 (1959); D. A. Kochkin, DAN, 135, 857 (1960); author's certificate 133224 August 25, 1960), which they called organotin and organolead methacrylates of the general structure $R_3SnOOCC(CH_3)=CH_2$, $R_2Sn(OOCC(CH_3)=CH_2)_2$, $(C_6H_5)_2Pb[OOCC(CH_3)=CH_2]_2$. They also obtained polymers and copolymers with several unsaturated monomers. It was found that orotic acid (4-uracyl carboxylic acid, a vitamin of the B_{13} group) participates in the formation of nucleic acid, and is an important factor furthering bacterial growth. Orotic acid is, however, hardly known. It

Card 1/5 4

was synthesized by a method of G. E. Hilbert (see below); the synthesis is described here. Instead of the potassium ferricyanide, the authors used a mixture of sodium bichromate and sulfuric acid, which facilitated the synthesis considerably. In addition, the authors synthesized organotin and organolead esters of the following amino acids: α-alanine, p-amino benzoic acid, pyridic acids (nicotic and isocinchomeronic acids) and pyrimidic acids (orotic and uracyl acetic acid). It was found that some of these substances have a germicidal effect on several micro-organisms. The synthesis was performed as follows:

$$R_3MOH + R'COOH \rightarrow R_3MOOCR' + H_2O;$$
$$2R_3MOH + HOOCR''COOH \rightarrow R_3MOOCR''COOMR_3 + 2H_2O;$$
$$R_2MO + 2R'COOH \rightarrow R_2M(OOCR')_2 + H_2O;$$
$$R_3MOMR_3 + 2R'COOH \rightarrow 2R_3MOOCR' + H_2O, \text{ где } M = Sn, Pb.$$

where M = Sn, Pb. The reaction of triphenyl plumbanol with nicotic and uracyl acetic acids proceeds in another way. It forms diphenyl plumbylene esters of the corresponding acids. This is similar to the interaction with methacrylic acid. In this reaction, a phenyl group is split off:

$$(C_6H_5)_3PbOH + 2C_5H_4NCOOH \rightarrow (C_6H_5)_2Pb(OOCC_5H_4N)_2 + C_6H_6 + H_2O.$$
$$(C_6H_5)_3PbOH + 2\ HOOCCH_2C_4H_3N_2O_2 \rightarrow (C_6H_5)_2Pb(OOCCH_2C_4H_3N_2O_2)_2 + C_6H_6 + H_2O.$$

X

28651

Organotin and organolead derivatives... S/020/61/139/006/018/022
B103/B101

The bactericidal action of organotin and organolead compounds depends on the nature of the alkoxy groups in the molecule. The derivatives of nicotic acid and alanine, for example, suppress the growth of such cultures as Escherichia coli, Streptococcas faecalis, and Lactobacillus casei even in low concentrations. All the organotin and organolead compounds synthesized are crystalline, difficultly soluble in water, and readily soluble in organic solvents. Trimethyl-stannyl esters of α-alanine and orotic acid are soluble in water, but difficultly soluble in organic solvents. Diisobutyl stannone, $(iso\text{-}C_4H_9)_2SnO$, is a white, amorphous, non-fusible substance decomposing when heated in the flame. It is unsoluble in water, difficultly soluble in ether, and soluble in alcohol, acetone, and chloroform. It was used to synthesize No. 45 (cf. Table 1) and obtained by hydrolysis of triisobutyl bromostannane: $(iso\text{-}C_4H_9)_3SnBr$.

There are 1 table and 8 references: 6 Soviet and 2 non-Soviet. The reference to the English-language publication reads as follows: Ref. 5: G. E. Hilbert, J. Am. Chem. Soc., 54, 2082 (1932).

Card 3/5 4

X